ITEM F SUSTAINABILITY

Report of Environmental Guidelines Subcommittee

Environmental sustainability guidelines

The intent of this document is to simplify the existing national code named Leadership in Energy and Environmental Design (LEED). Although LEED was created in pursuit of a noble goal that we share, it is extremely complicated and provides no incentives beyond formal recognition of expensive efforts. Rather than awarding potential developers abstract LEED certifications, we wanted to entice them with the prospect of building larger structures and thus making greater profits in exchange for building energy efficient structures.

Also, we kept in mind that small and medium size construction companies and home owners cannot afford LEED certifications even if they wanted to build energy efficient structures. In order to allow them to do that, we wish to extend these guidelines to all new construction within Newton Centre Revitalization project and, consequently, use them as a prototype for the entire city of Newton.

I. Existing Conditions

From the environmental point of view the designated area of our study presents the following **challenges**:

- Most of the existing structures are energy inefficient and create large amounts of air pollution;
- The existing parking lots don't have enough greenery and create large heat islands;
- Most of the flat roofs have obsolete materials and don't reflect enough solar energy back into atmosphere thus contributing to the heat island effect;
- The area has too much of impervious surface that creates large amount of run-off water which taxes the city's storm sewage system **and does not recharge the water table.**

II. Goals

In order to fulfill our task of creating a vibrant urban habitat in the village of Newton Centre we must amend the current zoning **to allow** greater density within the designated boundaries. In order to achieve this goal we **will** present the Board of Aldermen with a viable solution to the current environmental, economic, social and aesthetic problems of the area. The following proposal concentrates on the environmental issues of that task.

III. Means

Encourage sustainable development in conjunction with the petition # 391-06 by Aldermen Vance and Baker to incorporate the rules of environmentally sound practice in Newton Zoning Ordinance. In view of the recent passage of this petition and in support of the principles of sustainable architecture advocated by the State of Massachusetts, the Green Decade Coalition of Newton, the Newton Conservators and the community of Newton at large, we propose the following:

- *Saving and creating open space while accommodating a greater density of new development;*
- *Reducing energy consumption of each structure;*
- *Reducing life cycle cost of each structure;*

- *Incorporating the best practices of new building technology;*
- *Creating FAR (Floor Area Ratio) incentives for applicants who fulfill the following criteria.*

IV. Criteria

Every new construction in Newton Centre shall **incorporate** the following basic design principles:

- *Orienting a structure's envelope in accordance with the sun and prevailing wind;*
- *Maximizing a structure's volume to surface ratio;*
- *Maximizing on-site greenery and open space;*
- *Active use of solar and wind energy;*
- *Passive use of solar and wind energy;*
- *Active use of geo-thermal energy;*
- *Use of energy efficient heating and lighting;*
- *Collection of rain water for reuse;*
- *Use of water saving appliances;*

V. Requirements

All new construction applicants who wish to receive the above mentioned FAR incentives in Newton Centre shall fulfill at least 15 of the total 30 Credit Point requirements. These incentives are determined as additions to Newton Zoning FAR limits in the following schedule: *15 Credit Points - 0.1 FAR 20 Credit Points - 02 FAR 25 Credit points - 0.3 FAR*

Credit I (5 points) Building envelope.
Use of energy efficient building envelope, including: use of thermal insulation beyond the requirements of Massachusetts Building Code; specifying the most durable, water repellent building materials; maximizing the volume to surface ratio of a building*.

Credit II (5 points) Solar energy
Active use of solar power for space heating and/or electric lighting including photo-voltaic cells, water type solar collectors, and other.

Credit III (5 points) Wind energy
Active use of wind power for electric lighting including wind turbines of various types and capacities, and other.

Credit IV (4 points) Geo-thermal energy
Use of geo-thermal energy for space heating and cooling including heat pump systems of various types and capacities; cooling ponds and spray ponds for space cooling, and other.

Credit V (2 points) Green roofs and green walls.
Installation of natural perennial greenery on roofs and walls of a structure.

Credit VI (2 points) Passive use of renewable sources of energy.
Proper orientation of structures; use of passive solar collectors such as Trombe walls and water columns; use of passive solar devices, such as sun scoops, sun breakers and sun shelves; use of passive wind collectors such as wind scoops and operable skylights; and use of indoor greenery, water pools, and other.

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Credit VII (2 points) Electric lighting, regeneration of heat and efficient appliances.
Use of energy efficient electric lighting and heating including fluorescent instead of incandescent bulbs, collection and distribution of heat from lighting systems; use of the most current energy efficient furnaces and water heaters; use of the most current energy efficient fuels and **appliances. .**

Credit VIII (1 point) Rain water collection.
Use of rain water and gray water for irrigation including installation of rain water cisterns; use of kitchen and shower water for irrigation and other.

Credit IX (1 point) Water saving appliances.
Use of water saving appliances including low-flow shower heads and faucets; use of low-flow and foam toilets, and other latest technological achievements.

Credit X (1 point) Landscaping.
Landscaping above and beyond the current Newton Zoning requirements including landscaping more than the required 5% of a parking lot area; installation of green roofs and gardens, planting deciduous trees in front of the south-exposed walls and roofs; planting evergreen plants in front of north-exposed walls.
Credit XI (1 point) Recycling.
Use of recycled materials that were salvaged or processed from demolition of an existing structure(s), including brick, concrete, wood, steel and other, at the minimum amount of 10 cubic yards, **and recycling materials that cannot be reused on designated project.*****

Credit XII (1 point) Topography.
Minimal change of the existing topography, including: limiting the imported and exported soil to and from a construction site to the maximum of 10% of the re-graded soil.

* The intent of this document is to serve as a prototype for the environmental requirements of Newton Zoning Ordinance. It was endorsed by David DelPorto, Vice President of the Newton Solid Waste Commission. Currently it is being discussed by Newton Green Decade Coalition, Newton, High Performance Building Committee, and Newton Centre Task Force Committee.
** Below are computations of the Volume to Surface Ratio relative to the
20,000 s. f. maximum development area allowed by the current Newton Zoning ordinance. Graphic illustrations are to follow shortly.
*The increased density itself is an energy saving, pollution reducing and the open space increasing mechanism. For example, a 2-story, 20,000 s.f. structure would have a 10,000 s. f. footprint and a Volume to Surface Ratio (VIS) of 11.1. But the same 20,000 s. f. structure of 4 stories would have a 5,000 s. f. footprint and a VIS of 22.2 or 9% greater. This means that the 4-story structure is more energy efficient and occupies less land than the 2-story structure.*****
2-story structure -11.11 VIS 3-story structure -12.20 VIS 4-story structure -12.22 VIS 5-story structure -12.05 VIS 10-story structure -10.00 VIS
Also, the 4-story structures are less expensive than taller structures and aesthetically more compatible with the historical urban fabric of Newton such as Union Street in Newton Centre, Lincoln Street in Newton Highlands, Centre Street in Newton Corner and Washington Street in West Newton Center.
*** Applicant must submit a Solid Waste Management Plan with the emphasis on recycling and hazardous waste in accordance with the state and local regulations.